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EXAMINER
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SAMUEL, DEWANDA A

ART UNIT	PAPER NUMBER
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2616

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/705,356	<b>Applicant(s)</b> JIANG, SAM SHIAW-SHIANG	
	<b>Examiner</b> DeWanda Samuel	<b>Art Unit</b> 2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 November 2003 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                               | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                      | 5) <input type="checkbox"/> Notice of Informal Patent Application                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____  |

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments filed 09/06/2007 with respect to claim 1-17 have been fully considered but they are not persuasive for the following reasons.

4. Applicant alleges " if the value of the N<sub>length</sub> field is not equal to 0 discarding data octets in the PDU if the value of the NLENGTH field is not equal to 0; discarding data octets in the PDU having its SN equal to N\_MRWLENGTH up to and including the data octet indicated by the first "Length Indicator" field of the same PDU" and that the claimed invention "discards one LI ( The first LI) and the corresponding data octets in PDU with SN + SN\_MRW length ".

Examiner respectfully disagrees, Yi et al. discloses when the NLENGTH is greater than 0 the receiver preferably discards the first NLENGTH LIs (length indicator) and the corresponding data octets in the PDU with sequence number SN MRWLENGTH ( column 11 line 24-27). The first N<sub>LENGTH</sub> LIs discard the first LI along with any other N<sub>LENGTH</sub> LIs ( length Indicators). Also, the claimed invention did not specify the how many LI( length Indicators) was discarded in claim 9. However, Yi et al. teaches the claimed invention.

Applicant alleges " "while there exists a SN\_MRWi field, other than the SN\_MRWLENGTH field, containing the same value as the SN\_MRWLENGTH field has, deleting the SN\_MRWi field containing the same value as the SN\_MRWLENGTH field has".

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Examiner respectfully disagrees, Torsner et al. discloses having a mechanism for avoiding ambiguities between originally-transmitted and retransmitted data units (page 4 paragraph 45)... a determination on whether a data unit with a sequence number was previously received and discarding the data unit if valid determination was made.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. **Claims 9-10 and 16-17** are rejected under 35 U.S.C. 102(e) as being anticipated by Yi et al. (US Patent 7,054,270).

**With regard to claim 9**, Yi et al. discloses having a modified MRW *procedure to prepare a status PDU with a MRW SUFI, which is used by a sender to inform a receiver about moving its reception window boundaries or these SDUs should be discarded*, Yi et al. discloses having a method utilizing MRW (move receiving window) technique with PDU within the MRW SUFI (move receiving window super field)... further "transmitting discard information about the

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discarded RLC SDU to the receiving side entirely when the transmission MRW (move receiving window) mode indicator is configured ( column line 6 line 61-64).

wherein the procedure sets up the fields of a MRW SUFI, such as Type,

LENGTH, SN\_MRWi, SN, MRWLENGTt-I (the last SN\_MRWi field) and

NLENGTH according ( fig.3 and column 9 line 47-67); Yi et al. discloses having

in fig. 3 a MRW SUFI with a type, LENGTH, SN\_MRWi, SN\_MRWLENGTH (the last SN\_MRW field) and NLENGTH ( fig.3 and column 9 line 47-67).

and each PDU has been assigned a corresponding sequential number (SN), Yi

et al. discloses the a sequence number mode of a PDCP layer is set, the PDCP

layers of transmission and receiving sides reconcile the sequence numbers of

PDCP PDUs ( i.e. RLC SDU, column 9 line 6-9)...also in fig.5 Yi et al. discloses

the each PDUs is assigned corresponding sequential numbers.

*wherein the method comprises the steps of.* " at the receiver', receiving a status

*PDU with a MRW SUFI from the sender; checking the value of the LENGTH field*

*and discarding PDUs accordingly;* Yi et al. discloses that the receiving side have

received the MRW SUFI from the transmitting side the receiving side also

discards the discards the PDUs PDU0 to PDU6. The PDUs are those which have

sequence numbers equal to or lower than "7" (which is the parameter SN\_MRW

included in the MRW SUFI (column 12 line 40-47).

*if the value of the NLEN~TH field is equal to 0; reassembling data from the first*

*data octet of the PDU having its SN equal to SN MRWLENGTH;* Yi et al

discloses when the NLENGTH-0 ( column 11 line 19)... a NLENGTH equal to 0

indicates that the last SDU ended in the PDU with sequence number

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SN\_MRWLENGTH-1 and that the first data octet in the PDU with sequence number SN\_MRWLENGTH is the first data octet to be reassembled next (column 11 line 33-37).

*if the value of the NLENGTH field is not equal to 0; discarding data octets in the PDU having its SN equal to SN\_MRWLENGTH up to and including the data octet indicated by the first "Length Indicator" field of the same PDU; Yi et al. discloses when the NLENGTH is greater than 0 the receiver preferably discards the first NLENGTH LI (length indicator) and the corresponding data octets in the PDU with sequence number SN\_MRWLENGTH (column 11 line 24-27).*

*and reassembling data from the succeeding data octet after the last discarded data octet of the PDU having its SN equal to SN\_MRWLENGTH. Yi et al. discloses a NLENGTH equals to 0 indicates that the last SDU ended in the PDU with the sequence number SN\_MRWLENGTH-1 and that the first data octet in the PDU with the sequence number SN\_MRWLENGTH is the first data octet to be reassembled next (column 11 line 33-37).*

**With regard to claim 10,** Yi et al. teaches the method recited in claim 9. Wherein checking the value of the LENGTH field and discarding PDUs accordingly; Yi discloses having a MRW SUFI that includes location information of each of the discarded and a value parameter LENGTH... in fig. 5 the LENGTH becomes "4" which represents four parameters of SN\_MRW1 and SN\_MRW4 and they in turn represent the sequence numbers of the PDUs... (column 11 line

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55-63)... in addition, it is only necessary to inform the receiving side ("receiver") of the location information of the last discarded one of the discarded SDUs ( column 12 line 28-31)... the receiving side, having received the MRW SUFI discards PDUs...( column 12 line 41-42).

further comprising the steps of." if the value of the LENGTH field is equal to 0; Yi et al. discloses checking if the if the LENGTH field is set to "0000" ( column 10 line 52-53).

*processing the received MRW SUFI as if there is only one SN\_MRWi field, SN MRWLENGTH; Yi et al. discloses when the last transmitted SDU exceeds or is out of the range of the transmission window however, the field of the parameter LENGTH is set to "0000"... when the discarded information of the transmitting side transmitted to the receiving side, the transmitting side radio system transmits the information of the discarded SDUs, either entirely or in part, to the receiving side according to whether the transmission MRW mode indicator is configured for its RLC layer by the RLC layer ( column 10 47-60).*

otherwise if the value of the LENGTH field is not equal to 0; Yi et al. discloses having a value of the parameter LENGTH is "1" ( fig. 6).

*processing the received MRW SUFI as if there are LENGTH number of SN\_MRWi fields, SN\_MRWi up to SN MRWLENGTH; and discarding PDUs up to and including the PDU having its SN equal to (SN MRWLENGTH -1). Yi et al. discloses the receiving side having received the MRW SUFI discards PDUs PDU0 to PDU6. The discarded PDUs are those which have sequence numbers equal to or lower than "7" which is the parameter SN\_MRW included in the MRW*

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SUFI (column 12 line 41-47).

**With regard to claim 16**, Yi et al. discloses A receiver using a modified MRW procedure to receive a status PDU with a MRW SUFI, which is sent by a sender to inform the receiver about moving its reception window boundaries or these SDUs should be discarded, Yi et al. discloses "transmitting discard information about the discarded RLC SDU to the receiving side entirely when the transmission MRW (move receiving window) mode indicator is configured. wherein the procedure sets up the fields of a MRW SUFI, such as Type, LENGTH, SN\_MRWi, SN\_MRWLENGTH (the last SN\_MRWi field) and NLENGTH accordingly; Yi et al. discloses having in fig. 3 a MRW SUFI with a type, LENGTH, SN\_MRWi, SN\_MRWLENGTH (the last SN\_MRW field) and NLENGTH.

and each PDU has been assigned a corresponding sequential number (SN), Yi et al. discloses the a sequence number mode of a PDCP layer is set, the PDCP layers of transmission and receiving sides reconcile the sequence numbers of PDCP PDUs ( i.e. RLC SDU, column 9 line 6-9)..also in fig.5 Yi et al. discloses the each PDUs is assigned corresponding sequential numbers.

*wherein the receiver comprises: means for receiving a status PDU with a MRW SUFI from the sender; means for checking the value of the LENGTH field and discarding PDUs accordingly;* Yi et al. discloses that the receiving side have received the MRW SUFI from the transmitting side the receiving side also



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discards the discards the PDUs PDU0 to PDU6. The PDUs are those which have sequence numbers equal to or lower than "7" (which is the parameter SN\_MRW included in the MRW SUFI (column 12 line 40-47).

*means for checking if the value of the NLENGTH field is equal to 0; means for reassembling data from the first data octet of the PDU having its SN equal to SNMRWLENGTH; Yi et al discloses when the NLENGTH=0 ( column 11 line 19)... a NLENGTH equal to 0 indicates that the last SDU ended in the PDU with sequence number SN\_MRWLENGTH-1 and that the first data octet in the PDU with sequence number SN\_MRWLENGTH is the first data octet to be reassembled next ( column 11 line 33-37).*

*means for checking if the value of the NLENGTH field is not equal to 0; means for discarding data octets in the PDU having its SN equal to SN MRWLENGTH up to and including the data octet indicated by the first "Length Indicator" field of the same PDU; Yi et al. discloses when the NLENGTH is greater than 0 the receiver preferably discards the first NLENGTH LI (length indicator) and the corresponding data octets in the PDU with sequence number SN\_MRWLENGTH ( column 11 line 24-27).*

*and means for reassembling data from the succeeding data octet after the last discarded data octet of the PDU having its SN equal to SN MRWLENGTH. Yi et al. discloses a NLENGTH equals to 0 indicates that the last SDU ended in the PDU with the sequence number SN\_MRWLENGTH-1 and that the first data octet in the PDU with the sequence number SN MRWLENGTH is the first data octet to*

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be reassembled next

(column 11 line 33-37).

**With regard to claim 17**, Yi et al. teaches the receiver recited in claim 16. Wherein means for checking the value of the LENGTH field and discarding PDUs accordingly; Yi discloses having a MRW SUFI that includes location information of each of the discarded and a value parameter LENGTH... in fig. 5 the LENGTH becomes "4" which is represents four parameters of SN\_MRW1 and SN\_MRW4 and they in turn represent the sequence numbers of the PDUs... (column 11 line 55-63)... in addition, it is only necessary to inform the receiving side ("receiver") of the location information of the last discarded one of the discarded SDUs ( column 12 line 28-31)...the receiving side, having received the MRW SUFI discards PDUs... ( column 12 line 41-42). further comprising: means for checking if the value of the LENGTH field is equal to 0; Yi et al. discloses checking if the if the LENGTH field is set to "0000" ( column 10 line 52- 53).

*means for processing the received MRW SUFI as if there is only one SN\_MRWi field, SN\_MRWLENGTH*; Yi et al. discloses when the last transmitted SDU exceeds or is out of the range of the transmission window however, the field of the parameter LENGTH is set to "0000"...when the discarded information of the transmitting side transmitted to the receiving side, the transmitting side radio system transmits the information of the discarded SDUs, either entirely or in part,

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to the receiving side according to whether the transmission MRW mode indicator is configured for its RLC layer by the RLC layer ( column 10 47-60).

*means for checking if the value of the LENGTH field is not equal to 0; Yi et al.*

discloses having a value of the parameter LENGTH is 1" ( fig. 6).

*means for processing the received MRW SUFI as if there are LENGTH number of SN\_MRWi fields, SN\_MRWi up to SN MRWLENGTH; Yi et al.* discloses the receiving side having received the MRW SUFI discards PDUs PDU0 to PDU6.

The discarded PDUs are those which have sequence numbers equal to or lower than "7" which is the parameter SN\_MRW included in the MRW SUFI (column 12 line 41-47).

*and means for discarding PDUs up to and including the PDU having its SN equal to (SN MRWLENGTH - 1).* Yi et al. discloses having a last SDU end the PDU with sequence number SN MRWIENGTH-1 to be discarded ( column 11 line 28-36).

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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5. **Claims 1-8 and 11-15** are rejected under 35 U.S.C. 103(a) as being unpatentable over Yi et al (US Patent 7,054,270) in view of Torsner et al (PG PUB 2003/0169741 ).

**With regard to claim 1**, Yi et al. discloses having a modified MRW procedure to prepare a status PDU with a MRW SUFI, which is used by a sender to inform a receiver about moving its reception window boundaries or discarding certain SDUs, Yi et al. discloses having a method for transmitting data from the RLC layer in radio communication (title). Yi et al. further discloses "transmitting discard information about the discarded RLC SDU to the receiving side entirely when the transmission MRW (move receiving window) mode indicator is configured.

*wherein the procedure sets up the fields of a MRW SUFI, such as Type, LENGTH, SN\_MRW, SN\_MRWLENGTH (the last SN\_MRW field) and NLENGTH accordingly ( fig.3 and column 9 line 47-67);* Yi et al. discloses having in fig. 3 a MRW SUFI with a type, LENGTH, SN\_MRWi, SN MRWLENGTH (the last SN\_MRW field) and NLENGTH and each PDU has been assigned a corresponding sequential number (SN), Yi et al. discloses the a sequence number mode of a PDCP layer is set, the PDCP layers of transmission and receiving sides reconcile the sequence numbers of PDCP PDUs ( i.e. RLC SDU, column 9 line 6-9);. also in fig.5 Yi et al. discloses the each PDUs is assigned corresponding sequential numbers.

*wherein the method comprise the steps of at the sender: triggering the MRW*

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*procedure upon a plurality of trigger events;* Yi et al. discloses the a sequence number mode of a PDCP layer is set, the PDCP layers of transmission and receiving sides reconcile the sequence numbers of PDCP PDUs ( i.e. RLC SDU). Therefore, the MRW mode set indicator should be configured (column 9 line 6-10).

*checking the status of a "Send MRW" and acting accordingly;* Yi et al. discloses in fig. 7 a flow chart that has a instruction to check the transmission MRW (move receiving window) indicator 740 and further instructions are given according to the result of the status.

*setting up the SN MRWLENGTH field for the last discarded SDU and the NLENGTH field accordingly;* Yi et al. discloses "the parameter N\_MRWLENGTH which represents the sequence number of the PDU which belongs to (indicates) an end of the last discarded SDU ( column 10 line 331-34)... NLENGTH which indicates that the last discarded SDU corresponds sequentially to the SDU in the indicated PDU ( column 10 line 35-36).

*setting NLENGTH-I equal to 1;* Yi et discloses setting NLENGTH to "1" ( column 12 line 1-3).

*setting up the LENGTH field accordingly.* Yi et al. further discloses setting up the LENGTH to 1 (column 12 line 34-35).

Yi et al. does not discloses while there exists a SN\_MRWi field, other than the SN\_MRWLENGTH field, containing the same value as the N\_MRWLENGTH

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field has, deleting the SN\_MRWi field containing the same value as the SN MRWLENGTH field has; Torsner et al. discloses having a stall avoidance mechanism and sequence ambiguity in an automatic repeat request protocol (title). Torsner et al. further discloses if the data unit sequence numbering scheme goes from 0 to 7 and then repeats modulo 8. In fig. 5A the transmitter transmit a first set of eight data units having sequence numbers 0-7 by time T0. By the time T1, the transmitter has transmitted a second set of eight data units also having sequence numbers 0-7. In fig. 5B, the receiver has only received data units 1,2,3, and 5 at time T0 and is missing data units 0, 4, 6 and 7...at T0 data unit 0 is deemed permanently missing and removed ( page 4 paragraph 41 line 1-28). It is inferred the data unit is removed if the sequence number is equal to respective sequence number of a data unit.

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have discloses having a method for transmitting data from the RLC layer in radio communication (title) as taught by Yi et al. removing data units which has identical sequence numbers as taught by Torsner to prevent delays and increase throughput rate.

**With regard to claim 2,** in combination Yi et al. and Torsner et al. teaches the method recited in claim 1. Wherein one of the trigger events is when a time out occurs; Yi et al. discloses in fig. 7 an instruction to check if the PDU transmission number that receives the MAX 720 then the SDU 10 and SDU13 may be discarded if the previously set transmission time in the timer for the SDU

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10 and SDU13 expires or the prescribed number of transmission is limited (column 11 line 43-48)... also in fig.7 the MRW mode indicator is configured.

**With regard to claim 3**, in combination Yi et al. and Torsner et al. teaches the method recited in claim 1. Wherein one of the trigger events is that the number of retry of sending a PDU exceeds the maximum number of retransmission; Yi et al. discloses in fig. 7 an instruction to check if SDU 10 and SDU13 may be discarded if the previously set transmission time in the timer for the SDU 10 and SDU13 expires or the prescribed number of transmission is limited (column 11 line 43-48)...also in fig.7 the MRW mode indicator is configured.

**With regard to claim 4**, in combination Yi et al. and Torsner et al. teaches the method recited in claim 1. Wherein setting up the SN M RELENGTHfield for the last discarded SDU and the NLENGTHfield accordingly; Yi et al. discloses "the parameter SN MRWLENGTH which represents the sequence number of the PDU which belongs to (indicates) an end of the last discarded SDU ( column 10 line 331-34)... NLENGTH which indicates that the last discarded SDU corresponds sequentially to the SDU in the indicated PDU ( column 10 line 35-36).

*further comprises the steps of. if the last discarded SDU ends in a PDU containing the "Length Indicator" of the last discarded SDU and the PDU*

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*contains no new SDU*; Yi et al. discloses the NLENGTH indicates which LI (length Indicator) in the PDU with sequence number SN\_MRWLENGTH corresponds to the last SDU (service data unit) to be discarded in the receiver (column 11 line 30-33).

*setting SN MRELENGTH equal to (the SN of the PDU containing the "Length Indicator" of the last discarded SDU+1)*; Yi et al. discloses preferably SN\_MRWi is the sequence number of the PDU that contains the length indicator(LI) of the ith SDU to be discarded in the receiver (column 11 line 15-19).

setting NLENGTH equal to 0; Yi et al. discloses having NLENGTH equal to 0 (column 11 line 33) otherwise if the PDU contains at least one segment of a new SDU; Yi et al. discloses having NLENGTH equal to 0... and the first data octet in the PDU with sequence number SN\_MRWLENGTH is the first data octet to be reassembled next (column 11 line 33-37).

*setting SN MRWLENGTH equal to (the SN of the PDU containing the "Length Indicator" of the last discarded SDU)*; Yi et al. discloses preferably SN\_MRWi is the sequence number of the PDU that contains the length indicator(LI) of the ith SDU to be discarded in the receiver (column 11 line 15-19).

and setting NLENGTH equal to 1; Yi et al. discloses having NLENGTH greater than 0 (column 11 line 24).

**With regard to claim 5**, in combination Yi et al. and Torsner et al. teaches the method recited in claim 1. Wherein setting up the LENGTH field accordingly; Yi et al. discloses having a LENGTH parameter (column 10 line 1).



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further comprising the following steps of: if there is only one SN\_M\_RWi fie/d in the MRW SUFI/ to be sent and the SN of the SN\_MRWi fie/d extends above the configured transmission window; setting LENGTH equal to 0; Yi et al. discloses in fig. 6 the format of one SN\_M\_RWi in MRW SUFI and in claim 5 Yi et al. discloses that if the last discarded SDU transmitted to the receiving side exceeds a range of transmission window the LENGTH is set to "0000" ( column 10 line 50-53 and column 11 line 1-5) and otherwise, setting LENGTH equal to the number of SN\_MRWi fields. Yi et al. discloses the Length field is used to indicate the number of SN\_MRWi fields in the super-field of type MRW. The values "0001 through "1111" 1 through 15 SN\_MRW I respectively ( column 11 line 1-5).

**With regard to claim 6**, in combination Yi et al. and Torsner et al. teaches the method recited in claim 1. Wherein checking the status of the "Send MRW" ; Yi et al. discloses when the a transmission mode MRW is configured, such as a SEND MRW, a SN\_MRW is configured is used to indicate the end of each discarded SDU. That is the number of SN\_MRWfields equals the number of SDUs discarded by the MRW SUFI (column 11 line 6-11 ). further comprising the steps of." if a "Send MRW" flag is configured; Yi et al. discloses if the MRW mode set indicator ("SEND MRW flag") is configured ( column 9 line 6).

if there is more than 15 discarded SDUs; Yi et al. further discloses having a LENGTH field is... is used to indicate the number of SN\_MRW fields in the super-field of type MRW( move receiving window). The values "0001" through "1111"

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indicate 1 through 15 SN\_MRWi respectively ( column 11 line 1-5). However, it is known in the art that sequence numbers can range from 0 to 4095.

setting up the MRW SUFI for the first 15 discarded SDUs; Yi et al. discloses the Length field is used to indicate the number of SN\_MRWi fields in the super-field of type MRW. The values "0001 through "1111" 1 through 15 SN\_MRWi respectively (column 11 line 1-5). handling the rest discarded SDUs accordingly; Yi et al. discloses "o.. if the receiving side requests transmission when the discard information has been entirely or partially transmitted to the receiving side, the transmitting side sequentially transmits the numbered RLC PDUs to the receiving side (column 13 line 46-67)."

and assigning each SN\_MRWi with the SN of each corresponding discarded SDU. Yi et al. discloses "... if at least portions of RLC SDU0 to RLC SDU4 fail to be transmitted to the receiving side, the transmitting side sequentially numbers the sequence numbers of the PDUs corresponding to the SDUs to be transmitted subsequently thereafter from the sequence number of the presently-not-transmitted PDU... if the receiving side requests transmission when the discard information has been entirely or partially transmitted to the receiving side, the transmitting side sequentially transmits the numbered RLC PDUs to the receiving side ( column 13 line 46-67)."

**With regard to claim 7**, in combination Yi et al. and Torsner et al. teaches the method recited in claim 6. Wherein handling the rest discarded SDUs

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accordingly; Yi et al. discloses "... if at least portions of RLC SDU0 to RLC SDU4 fail to be transmitted to the receiving side, the transmitting side sequentially numbers the sequence numbers of the PDUs corresponding to the SDUs to be transmitted subsequently thereafter from the sequence number of the presently-not-transmitted PDU... if the receiving side requests transmission when the discard information has been entirely or partially transmitted to the receiving side, the transmitting side sequentially transmits the numbered RLC PDUs to the receiving side ( column 13 line 46-67)." further comprising the steps of. if the PDU that contains the Length Indicator of the fifteenth discarded SDU contains all the rest discarded SDUs and at least one segment of an SDU that is not discarded; Yi et al. discloses that the SN\_MRW is the sequence number of the PDU that contains the length indicator (LI) of the ith SDU to be discarded in the receiver ( column 11 line 15-18)... the SN\_MRW fields in the super-field of type MRW. The values "0001" through "1111" indicate 1 through 15 SN\_MRWi respectively (column 11 line1-3). Yi et al. further, discloses neglecting the rest discarded SDUs; Yi et al. discloses if the transmission MRW (move receiving window) mode indicator is not configured, the transmitting side transmits a portion of the discard information to the receiving side (column 13 line 38-456).

*and otherwise, handling the rest discarded SDUs in another MRW procedure.* Yi et al. discloses if the transmission MRW (move receiving window) mode indicator is not configured, the transmitting side transmits a portion of the discard information to the receiving side (column 13 line 38-456).

**With regard to claim 8**, in combination Yi et al. and Torsner et al. teaches the method recited in claim 1. *Wherein the length of the NLENGTH field can be one bit.* Yi et al. discloses having 1 bit NLENGTH field.

**With regard to claim 11**, Yi et al. discloses having a sender using a modified MRW procedure to prepare a status PDU with a MRW SUFI to inform a receiver about moving its reception window boundaries or discarding certain SDUs, Yi et al. discloses having a method for transmitting data from the RLC layer in radio communication (title). Yi et al. further discloses "transmitting discard information about the discarded RLC SDU to the receiving side entirety when the transmission MRW (move receiving window) mode indicator is configured. wherein the procedure sets up the fields of a MRW SUFI, such as Type, LENGTH, SN\_ MRWi, SN MRWLENGTH (the last SN\_ MRWi field) and NLENGTH accordingly ( fig.3 and column 9 line 47-67); Yi et al. discloses having in fig. 3 a MRW SUFI with a type, LENGTH, SN\_ MRWi, SN MRWLENGTH (the last SN\_ MRWfield) and NLENGTH. and each PDU has been assigned a corresponding sequential number (SN), Yi et al. discloses the a sequence number mode of a PDCP layer is set, the PDCP layers of transmission and receiving sides reconcile the sequence numbers of PDCP PDUs ( i.e. RLC SDU, column 9 line 6-9)..also in fig.5 Yi et al. discloses the each PDUs is assigned corresponding sequential numbers. wherein the sender comprises:

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means for triggering the MRW procedure upon a plurality of trigger events;

Yi et al. discloses that when a sequence number mode of a PDCP layer is set, the PDCP layers of transmission and receiving sides reconcile the sequence numbers of PDCP PDUs (i.e. RLC SDU). Therefore, the MRW mode set indicator should be configured (column 9 line 6-10)

means for checking the status of a "Send MRW" and acting accordingly; Yi et al. discloses in fig. 7 a flow chart that has an instruction to check the transmission MRW (move receiving window) indicator 740 and further instructions are given according to the result of the status.

*means for setting up the SN MRWLENGTH field for the last discarded SDU and the NLENGTH field accordingly;* Yi et al. discloses "the parameter

SN\_MRWLENGTH which represents the sequence number of the PDU which belongs to (indicates) an end of the last discarded SDU (column 10 line 331-

34)... NLENGTH which indicates that the last discarded SDU corresponds

sequentially to the SDU in the indicated PDU (column 10 line 35-36). Yi et al.

does not disclose while there exists a SN\_MRWi field, other than the

SN\_MRWLENGTH field, containing the same value as the SN\_MRWLENGTH field has, deleting the SN\_MRWi field containing the same value as the SN

MRWLENGTH field has; Torsner et al. discloses having a stall avoidance

mechanism and sequence ambiguity in an automatic repeat request protocol

(title). Torsner et al. discloses if the data unit sequence numbering scheme goes

from 0 to 7 and then repeats -modulo 8. In fig. 5A the transmitter transmits a first

set of eight data units having sequence numbers 0-7 by time T<sub>0</sub>. In. By the time

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T1, the transmitter has transmitted a second set of eight data units also having sequence numbers 0-7. In fig. 5B, the receiver has only received data units 1,2,3, and 5 at time T0 and is missing data units 0, 4, 6 and 7... at T0 data unit 0 is deemed permanently missing and removed ( page 4 paragraph 41 line 1-28)

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have discloses having a method for transmitting data from the RLC layer in radio communication (title) as taught by Yi et al. which include stall avoidance mechanism and sequence ambiguity in an automatic repeat request protocol (title) as taught by Torsner to prevent delays and increase throughput rate.

setting NLENGTH equal to 1; Yi et discloses setting NLENGTH to "1" ( column 12 line 1-3).

*setting up the LENGTH field accordingly.* Yi et al. further discloses setting up the LENGTH to 1 (column 12 line 34-35).

**With regard to claim 12**, in combination Yi et al. and Torsner et al. teaches the method recited in claim 11. Wherein means for setting up the SN MRWLENGTH field for the last discarded SDU and the NLENGTH field accordingly; Yi et al. discloses "the parameter SN\_MRWLENGTH which represents the sequence number of the PDU which indicates an end of the last discarded SDU ( column 10 line 331-34)... NLENGTH which indicates that the last discarded SDU corresponds sequentially to the SDU in the indicated PDU (

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column 10 line 35-36).

*further comprises: means for checking if the last discarded SDU ends in a PDU*

*containing the "Length Indicator" of the last discarded SDU and the PDU*

*contains no new SDU; Yi et al. discloses the NLENGTH indicates which LI (*

*length Indicator) in the PDU with sequence number SN\_MRWLENGTH*

*corresponds to the last SDU ( service data unit) to be discarded in the receiver(*

*column 11 line 30-33).*

*means for setting SN MRWLENGTH equal to (the SN of the PDU containing the*

*"Length Indicator" of the last discarded SDU+1); Yi et al. discloses preferably*

*SN\_MRWi is the sequence number of the PDU that contains the length*

*indicator(LI) of the ith SDU to be discarded in the receiver ( column 11 line 15-*

*19).*

*means for setting NLENGTH equal to 0; Yi et al. discloses having NLENGTH*

*equal to 0 (column 11 line 33). ;*

*means for checking if the PDU contains at least one segment of a new SDU; Yi*

*et al. discloses having NLENGTH equal to 0.o. and the first data octet in the PDU*

*with sequence number SN\_MRWLENGTH is the first data octet to be*

*reassembled next ( column 11 line 33-37).*

*means for setting SN MRWLENGTH equal to (the SN of the PDU containing the*

*"Length Indicator" of the last discarded SDU); Yi et al. discloses preferably*

*SN\_MRWi is the sequence number of the PDU that contains the length*

*indicator(LI) of the ith SDU to be discarded in the receiver ( column 11 line 15-*

*19).*

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and means for setting NLENGTH equal to 1; Yi et al. discloses having NLENGTH greater than 0 ( column 11 fine 24).

**With regard to claim 13**, in combination Yi et al. and Torsner et al. teaches the method recited in claim 11. Wherein means for setting up the LENGTH field accordingly further comprising: means for checking if there is only one SN\_MRWi field in the MRW SUFI to be sent and the SN of the SN\_MRWi field extends above the configured transmission window; means for setting LENGTH equal to 0; Yi et al. discloses in fig. 6 the format of one SN M RWi in MRW SUFI and in claim 5 Yi et al. discloses that if the last discarded SDU transmitted to the receiving side exceeds a range of transmission window the LENGTH is set to "0000"( column 10 line 50-53 and column 11 line 1-5).

*and otherwise, means for setting LENGTH equal to the number of SN\_MRWi fields.* Yi et al. discloses the Length field is used to indicate the number of SN\_MRWi fields in the super-field of type MRW. The values "0001 through "1111" 1 through 15 SN\_MRW I respectively ( column 11 line 1-5).

**With regard to claim 14**, in combination Yi et al. and Torsner et al. teaches the method recited in claim 11. *Wherein means for checking the status of the "Send MRW"* ; Yi et al. discloses when the a transmission mode MRW is configured, such as a. SEND MRW, a SN\_MRW is configured is used to indicate



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the end of each discarded SDU. That is the number of SN\_MRW fields equals the number of SDUs discarded by the MRW SUFI (column 11 line 6-11).

further comprising: means for checking if a "Send MRW" flag is configured; Yi et al. discloses if the MRW mode set indicator ("SEND MRW flag") is configured.

means for checking if there is more than 15 discarded SDUs; Yi et al. further discloses setting up the MRW SUFI for the first 15 discarded SDUs; Yi et al. discloses the Length field is used to indicate the number of SN\_MRWi fields in the super-field of type MRW. The values "0001 through "1111" 1 through 15 SN\_MRW I respectively ( column 11 line 1-5).

*means for setting up the MRW SUFI for the first 15 discarded SDUs; Yi et al. discloses the Length field is used to indicate the number of SN\_MRWi fields in the super-field of type MRW. The values "0001 through "1111" 1 through 15 SN\_MRW I respectively ( column 11 line 1-5).*

*means for handling the rest discarded SDUs accordingly; Yi et al. discloses "... if the receiving side requests transmission when the discard information has been entirely or partially transmitted to the receiving side, the transmitting side sequentially transmits the numbered RLC PDUs to the receiving side ( column 13 line 46-67)."*

*and means for assigning each SN\_MRWi with the SN of each corresponding discarded SDU. Yi et al. discloses "... if at least portions of RLC SDU0 to RLC SDU4 fail to be transmitted to the receiving side, the transmitting side sequentially numbers the sequence numbers of the PDUs corresponding to the SDUs to be transmitted subsequently thereafter from the sequence number of*

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the presently-not-transmitted PDU... if the receiving side requests transmission when the discard information has been entirely or partially transmitted to the receiving side, the transmitting side sequentially transmits the numbered RLC PDUs to the receiving side ( column 13 line 46-67)."

**With regard to claim 15**, in combination Yi et al. and Torsner et al. teaches the method recited in claim 14. *Wherein means for handling the rest discarded SDUs accordingly*; Yi et al. discloses "... if at least portions of RLC SDU0 to RLC SDU4 fail to be transmitted to the receiving side, the transmitting side sequentially numbers the sequence numbers of the PDUs corresponding to the SDUs to be transmitted subsequently thereafter from the sequence number of the presently-not-transmitted PDU... if the receiving side requests transmission when the discard information has been entirely or partially transmitted to the receiving side, the transmitting side sequentially transmits the numbered RLC PDUs to the receiving side ( column 13 line 46-67)."

*further comprising: means for checking if the PDU that contains the Length Indicator of the fifteenth discarded SDU contains all the rest discarded SDUs and at least one segment of an SDU that is not discarded*; Yi et al. discloses that the SN\_MRW is the sequence number of the PDU that contains the length indicator (LI) of the ith SDU to be discarded in the receiver ( column 11 line 15-18)o.. the SN\_MRW fields in the super-field of type MRW. The values "0001" through "1111" indicate 1 through 15 SN\_MRWi respectively (column 11 line1-3).

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*means for neglecting the rest discarded SDUs;* Yi et al. discloses if the transmission MRW (move receiving window) mode indicator is not configured, the transmitting side transmits a portion of the discard information to the receiving side (column 13 line 38- 456).

*and otherwise, means for handling the rest discarded SDUs in another MRW procedure.* Yi et al. discloses if the transmission MRW (move receiving window) mode indicator is not configured, the transmitting side transmits a portion of the discard information to the receiving side (column 13 line 38-456).

### ***Prior Art***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure

Kim et al. ( US patent 7,130,295) discloses having a data retransmission apparatus and method in a mobile communication system.

3<sup>rd</sup> Generation Partnership Project technical specification Group Radio Access Network; RLC protocol specification .

### ***Conclusion***


Any inquiry concerning this communication or earlier communications from the examiner should be directed to DeWanda Samuel whose telephone number is (571) 270-1213. The examiner can normally be reached on Monday-Thursday 8:30-5:30 EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Q. Ngo can be reached on (571) 272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DeWanda Samuel  
11/8/2007



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